

15.14 MULTIPLE CHOICE QUESTIONS (SELF PRACTICE):

Galvanometer:

- (1) An device used for the detection and measurement of current is called:
* Galvanometer * Voltmeter * Ammeter * Avometer
- (2) The working of a galvanometer depends upon the:
* Force exerted on the coil * Torque exerted on the coil
* Mass of the coil * Area of coil
- (3) Galvanometer is based on the:
* Electromagnetic effect of current * Chemical effect of current
* Magnetic effect of current * Heating effect of current
- (4) The current passing through the coil of the galvanometer is:
* Inversely proportional to the angle of deflection of the coil
* Independent of the coil
* Directly proportional to the angle of deflection of the coil
* None of the above
- (5) The galvanometer constant is given by:
* C/NAB * NAB/C * NAC/B * NB/AC
- (6) The galvanometer can be made sensitive by making the value of factor C/NAB :
* Large * Small * Zero * Infinite
- (7) The sensitivity of a galvanometer can be increased by increasing: (2008)
* Magnetic field * Area of coil * Number of turns * All of them
- (8) $I = \frac{C}{BNA} \theta$ Hence to increase the sensitivity of a galvanometer, we must decrease the value of:
* θ * N * B * C
- (9) The unit of least count on a galvanometer scale represents:
* Division * Ohm * Volt * Henry
- (10) When the coil of the galvanometer in equilibrium, then the deflecting couple is:
* Zero * Equal to the restoring couple
* Greater than the restoring couple * Smaller than the restoring couple

Ammeter:

- (11) A device which is used to measurement of current is called:
* Ammeter * Voltmeter * Galvanometer * Avometer
- (12) A galvanometer is converted into an ammeter by connecting a suitable:
* High resistance in series * Low resistance in parallel
* High resistance in parallel * Low resistance in series

(2008, 2003 P.E, 2002 P.E, 2001)

(13) To convert a galvanometer into an ammeter the shunt resistance is given by:

$$* R_s = \frac{I_g R_g}{I - I_g} \quad * R_s = \frac{I_g R_g}{I - I_g} \quad * R_s = \frac{I - I_g}{I_g} R_g \quad * \frac{I - I_g}{I_g R_g}$$

(14) In order to increase the range of ammeter the shunt resistance is:

- * Decreased
- * Increased
- * Kept constant
- * Sometimes increased and sometime decreased

(15) In a circuit Ammeter is always connected in:

- * Series
- * Parallel
- * Both series and parallel
- * None of these

(16) A good ammeter is one which:

- * Can measure both alternating and direct current
- * Has very small internal resistance
- * Has very high internal resistance
- * Has linear scale of measurement

(17) A device which is used to measurement of voltage is called:

- * Ammeter
- * Voltmeter
- * Galvanometer
- * Avometer

(18) To convert a galvanometer into a voltmeter a resistance is connected in:

- * High resistance in series
- * Low resistance in parallel
- * High resistance in parallel
- * Low resistance in series

(19) To convert a galvanometer into a voltmeter the high resistance is given by:

$$* R_x = \frac{R_g - V}{(I - I_g)} \quad * R_x = \frac{I - I_g}{I_g R_g} \quad * R_x = \frac{V}{I_g} - R_g \quad * R_x = R_g \frac{V}{I_g}$$

(20) In order to increase the range of voltmeter the high resistance is:

- * Decreased
- * Increased
- * Kept constant
- * Sometime increased and some time decreased

(21) In a circuit, voltmeter is always connected in:

- * Series
- * Parallel
- * Both series and parallel
- * None of these

(22) A good voltmeter is one which:

- * Can measure both A.C and D.C
- * Has linear side of measurement
- * Has very small internal resistance
- * Has very high internal resistance

Wheatstone Bridge:

(23) A balanced Wheatstone bridge is used to measure:

- * Current
- * Voltage
- * Unknown resistance
- * Electric flux

(24) When Wheatstone bridge is balanced then:

- * Galvanometer is giving full deflection
- * Galvanometer's deflection is zero
- * $R_1 / R_2 > R_3 / R_4$
- * $R_1 / R_3 < R_3 / R_2$

- (25) Wheatstone bridge is an arrangement consisting of:
 * Three resistances * Two resistances * Four resistances * Five resistances
- (26) The condition for the Wheatstone Bridge to be balanced is given by:
 * $\frac{R_1}{R_2} = \frac{R_4}{R_3}$ * $\frac{R_1}{R_2} = \frac{R_3}{R_4}$ * $\frac{R_2}{R_1} = \frac{R_3}{R_4}$ * $\frac{R_2}{R_1} = \frac{R_4}{R_3}$
- (27) In a Wheatstone Bridge circuit we balance:
 * Resistance * Current * Voltage * All of these
- (28) Balanced position of wheatstone bridge is obtained when potential at the terminals of Galvanometer:
 * is same * is altered * is different * is established
- (29) A meter bridge is an apparatus used to measure the: (2013)
 * Current * Voltage * Magnetic field * Unknown resistance
- (30) A meter bridge also called:
 * Voltmeter * Ammeter * Galvanometer * Slide-wire bridge
- (31) The construction of meter bridge is based on the principle of a:
 * Voltmeter * Ammeter * A.C generator * Wheatstone bridge
- (32) Slide-wire bridge is a practical form of the:
 * Galvanometer * Post office box * Voltmeter * Wheatstone bridge
- (33) In Slide-wire bridge method, the unknown resistance is determined by the relation:
 * $x = \frac{\ell_2}{\ell_1} R$ * $x = \frac{1}{\ell_2} R$ * $x = \frac{R}{\ell_1 \ell_2}$ * $x = \frac{\ell_1}{\ell_2 R}$

Post Office Box:

- (34) P.O. Box is used to find:
 * Current * Resistance * e.m.f. * All of these
- (35) The working principle of a post office box is:
 * Wheatstone Bridge * Potentiometer * Telegraph line * None of these
- (36) Post office is a practical form of:
 * Ammeter * Voltmeter * Meter bridge * Wheatstone bridge
- (37) Which one of the following instrument can measure the unknown resistance which sufficient accuracy?
 * Potentiometer * Slide wire bridge * Post office box * Galvanometer
- (38) Three arms of a balanced post office box are 75 ohm resistance each. What is the resistance of the fourth arm?
 * 225 ohm * 150 ohm * 75 ohm * 300 ohm

Potentiometer, Ohmmeter, Avometer:

- (39) A potentiometer is an instrument used to measure:
 * Current * Voltage * Resistance * Electric flux

- (40) An instrument which measures potential without drawing any current from the circuit is known as:
* Voltmeter * Avometer * Potentiometer * Galvanometer
- (41) A potentiometer circuit give continuously varying:
* Potential difference * Capacitance
* Charge * Inductance
- (42) The apparatus used to compare the emf of two cell is:
* A Wheatstone bridge * A galvanometer
* A potentiometer * A ammeter
- (43) Which one of the following is used to determine internal resistance of a cell?
* Ammeter * Voltmeter * Galvanometer * Potentiometer
- (44) Potentiometer can be used as:
* Ammeter * Voltmeter * Galvanometer * Potential divider
- (45) Potentiometer is used to: (2003 P.M)
* Compare emf of two cell * Detect internal resistance of cell
* Measure P.D * All of these
- (46) To increase the accuracy of potentiometer: (2011, 2003 P.E)
* A uniform wire of a large length should be used
* A uniform wire of a small length should be used
* A non uniform wire should be used
* None of these

Miscellaneous:

- (47) An Avometer is a device which can measure: (2012, 2002 P.E)
* Voltage only * Current only
* Resistance only * Current, Voltage and Resistance
- (48) Which of following instruments is used to measure current potential difference and resistance:
* Ammeter * Voltmeter * Galvanometer * Avometer
- (49) A single device containing ammeter voltmeter and ohmmeter is called:
* VTVM * CRO * Potentiometer * Multimeter
- (50) AVO meter is used to find:
* Current * Resistance * e.m.f. * All of these
- (51) Which of the following device is not used for measuring resistance:
* P.O. Box * Potentiometer * Ohmmeter * Meter bridge
- (52) Which of the following can be used to measure the resistance:
* Ohm meter * Meter bridge * P.O Box * All of these

ANSWER KEY

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|---|---|
| 1. Galvanometer | 33. $x = \frac{\ell_2}{\ell_1} R$ |
| 2. Torque exerted on the coil | 34. Resistance |
| 3. Magnetic effect of current | 35. Wheatstone bridge |
| 4. Directly proportional to the angle of deflection of the coil | 36. Wheatstone bridge |
| 5. C / NAB | 37. Post Office Box |
| 6. Small | 38. 75 ohm |
| 7. All of them | 39. Voltage |
| 8. C | 40. Potentiometer |
| 9. Division | 41. Potential difference |
| 10. Equal to the restoring couple | 42. A potentiometer |
| 11. Ammeter | 43. Potentiometer |
| 12. Low resistance in parallel | 44. Potential divider |
| 13. $R_s = \frac{I_g R_g}{I - I_g}$ | 45. All of these |
| 14. Decreased | 46. A uniform wire of a large length should be used |
| 15. Series | 47. Current, Voltage and Resistance |
| 16. Has very small internal resistance | 48. Avometer |
| 17. Voltmeter | 49. Multimeter |
| 18. High resistance in series | 50. All of these |
| 19. $R_x = \frac{V}{I_g} - R_g$ | 51. Potentiometer |
| 20. Increased | 52. All of these |
| 21. Parallel | 53. Damping |
| 22. Has very high internal resistance | 54. Increases |
| 23. Unknown resistance | 55. Low resistance in parallel. |
| 24. Galvanometer's deflection is zero | 56. A high resistance in series |
| 25. Four resistances | 57. $\frac{C}{BAN}$ |
| 26. $\frac{R_1}{R_2} = \frac{R_3}{R_4}$ | 58. Meter bridge |
| 27. Voltage | 59. Voltmeter |
| 28. Is same | 60. Parallel |
| 29. Unknown Resistance | 61. A uniform wire of large length |
| 30. Slide-wire bridge | 62. Current passing through the coil |
| 31. Wheatstone bridge | 63. $R_1 R_4 = R_3 R_2$ |
| 32. Wheatstone bridge | |